

### **AMENDMENTS TO THE SPECIFICATION:**

Please amend the specification as follows:

Please amend the paragraph beginning at Page 1, line 17 as follows:

The pollution of water by industrial wastewater and sewage has progressively grown worse in recent years, and environmental water pollution has become a significant social problem. It is indicated that water in the upper reaches of rivers, which are sources of clear water, contains hardly decomposable pollutants such as agricultural chemicals, dioxins and environmental hormones, in small concentrations. The pollution of lower reaches of rivers is more serious; lower reaches of rivers are polluted with various chemical substances including organic chloride detergents, agricultural chemicals, synthetic detergents and dyes. The pollution of seepage from landfills containing industrial and domestic wastes is in an extremely serious condition. Active efforts are being made for the development of environmental water conservation techniques. Efforts have been made for the development of techniques for activated carbon treatments, membrane processes, ozonation treatments and biological treatments. An advanced oxidation process (hereinafter abbreviated to "AOP") using UV light, hydrogen peroxide, or a combination of UV light and hydrogen peroxide is a promising comprehensive process. Fig. 27 is a block diagram of assistance in explaining the advanced-oxidation process. Referring to Fig. 27, an advanced-oxidation water treatment system includes a water treating tank 51, a UV light source 54, a power supply 55 for supplying power to the UV light source 54, an ozone generator 56, an ozonized gas diffusing device 50 and a discharged-ozone decomposer 58. An ozonized gas is diffused in ~~bubble-s~~ bubbles by the ozonized gas diffusing device 50 into water

contained in the water treating tank 51. Then, the ozonized gas dissolves in the water. When the water containing the ozonized gas is irradiated with UV light, radical species having oxidizing power higher than that of ozone are produced in the water, and the radical species decompose hard-to-decompose substances that could not be decomposed by ozone. The advanced oxidation water treatment using ozone and UV light in combination is capable of achieving efficient decomposition, has improved deodorizing, decolorizing and sterilizing functions and is capable of achieving water purifying treatment without secondary waste.

Please amend the paragraph beginning at Page 2, line 20 as follows:

Although the advanced-oxidation water treatment system shown in Fig. 27 purifies water effectively, pollutants to be decomposed cannot efficiently be decomposed if the quantity of ozone diffused into the water or the quantity of UV light emitted by the UV light source becomes insufficient due to the variation of the quality of the water being treated. If surplus ozone 57 is diffused into the water, the ozonized gas not dissolved in the water and remaining in the water treating tank needs to be decomposed by the discharged-ozone decomposer 58 and increases load on the discharged-ozone decomposer 58. If a surplus quantity of UV light is emitted, the UV light source 54 consumes power uselessly and reduces the overall energy efficiency of the advanced-oxidation water treatment system. Organic substances and inorganic substances contained in the water adhere to the surface the UV-radiating wall of the UV light source 54 and reduce the UV transmittance of the UV-radiating wall. Consequently, the efficiency of decomposing pollutants contained in the water is

reduced. Work necessary to clean the surface of the UV-radiating wall increases load on the maintenance of the advanced-oxidation water treatment system.

Please amend the paragraph beginning at Page 4, line 19 as follows:

According to the present invention, ozone containing water is jetted directly onto the UV-radiating surface of the UV light source and the pollutants contained in the water to be treated are oxidized by large quantities of radical species produced in the vicinity of the UV-radiating surface. Thus, the impure water can efficiently be purified. The pollutants that could not be decomposed in the in the water supply pipe are oxidized by ozone or radical species while the water to be treated discharged from the water supply pipe flows upward from the bottom of the water treating tank, which increases the efficiency of the water purifying process, uses ozone effectively, reduces the amount of waste ozone, and reduces discharged-ozone processing cost.

Please amend the paragraph beginning at Page 17, line 26 as follows.

Referring to Fig. 3, an impure water conducting pipe 14 is disposed in a vertical position in a water treating tank 1 provided with a water inlet and a water outlet respectively connected to an impure water supply line 1a and a clean water delivery line 1b. ~~with its~~ An open lower end of pipe 14 is positioned near the bottom of the water treating tank 1. A plurality of UV lamps (UV light sources) 4 are arranged in a vertical arrangement in the impure water supply pipe 14. A plurality of jetting nozzles 5 are attached to the wall of the impure water conducting pipe 14 with their nozzle exits directed toward the UV-radiating surfaces 4a of the UV lamps 4 to jet an ozonic water supplied from an ozonic water tank 2 directly onto the UV-radiating surfaces 4a. An impure water pump 15 pumps the impure water through the impure water supply line 1a

connected to an upper part of the impure water conducting pipe 14 into the impure water conducting pipe 14.

Please amend the paragraph beginning at Page 18, line 17 as follows:

The high-pressure, high-concentration ozonic water is jetted through the jetting nozzles 5 toward the UV-radiating surfaces 4a. Consequently, large quantities of radical species, such as OH radicals, having high oxidizing power are produced at a high rate in the vicinity of the UV-radiating surfaces 4a where the intensity of UV radiation is the highest, and thereby the pollutants contained in the impure water can efficiently be ~~decompose~~ decomposed.

Please amend the paragraph beginning at Page 20, line 12 as follows.

Referring to Fig. 6, the interior of the water treatment tank 1 is divided into an upstream chamber (ozonation chamber) 25 and a downstream chamber (advanced-ozonation chamber) 26 by a vertical partition plate 22 having a lower end spaced from the bottom of the water treating tank 1. The downstream chamber ~~22~~ 26 is divided by a horizontal partition wall 23 into an upper part and a lower part. The horizontal partition wall 23 is provided with openings, and the advanced-ozonation modules 18 are fitted in the openings of the horizontal partition wall 23, respectively. Thus, impure water flows necessarily through the UV-irradiation tubes 20.

Please amend the paragraph beginning at Page 21, line 2 as follows:

The UV-assisted advanced-ozonation water treatment system in the fourth embodiment according to the present invention is capable of decomposing pollutants contained in the impure water more efficiently than the conventional diffusion type UV-assisted advanced-ozonation water treatment system and of efficiently purifying the

impure water. Organic and inorganic substances that contaminate the UV-radiating surfaces 4a are prevented from adhering to the UV-radiating surfaces 4a by the strong oxidizing effect of the ~~and the~~ impulsive force of the jets of the ozonic water jetted through the jetting nozzles 5. Consequently, the life of the UV lamps (UV light sources) 4 is extended significantly. Water treatment cost and maintenance cost can be reduced considerably because the UV-assisted advanced-ozonation water treatment system can easily be maintained.

Please amend the paragraph beginning at Page 21, line 34 as follows.

A mixture of a residual ozonized gas 16g accumulated in an upper space 16 in an ozonic water tank 2 and a residual ozonized gas 8g accumulated in an upper space 8 in the advanced-ozonation chamber 26 is supplied to the ozonized gas diffusing device 24. Ozonic water is supplied from the ozonic water tank 2 to jetting nozzles 5 included in the advanced-ozonation modules 18 and is jetted onto the surfaces of UV lamps 4 contained in UV-irradiation tubes 20 included in the advanced-ozonation modules 18.

Please amend the paragraph beginning at Page 22, line 7 as follows:

When the residual ozonized gas not dissolved in water in the ozonic water tank 2 and the residual ozonized gas not exhausted in the advanced-ozonation chamber 26 are ~~collected~~ collected and are supplied into the ozonizing chamber 25 for the preparatory treatment of the impure water prior to advanced-ozonation of the impure water. Therefore, the load on the advanced-ozonation chamber 26 is reduced and hence the quantity of the ozonic water to be supplied to the advanced-ozonation

modules 18 can be reduced. Consequently, costs of ozone generation and water treatment can be reduced.

Please amend the paragraph beginning at Page 24, line 29 as follows:

Referring to Fig. 10, a hydrogen peroxide injecting device 29 is connected to an impure water supply line 1a connected to a water treating tank 1. A hydrogen peroxide pump 31 feeds hydrogen peroxide from a container 30 to the hydrogen peroxide injecting device 29. Hydrogen peroxide supplied by the hydrogen peroxide injecting device 29 connected to the impure water supply line 1a is mixed in impure water, and an ozonized gas is mixed in the impure water in the water treating tank 1. The interaction of the ozone contained in the ozonized gas and the hydrogen peroxide in the water treating tank 1 produces radical species having oxidizing power higher than that of ozone, such as OH radicals in the impure water through the following reactions.

Please amend the paragraph beginning at page 38, line 11 as follows:

Referring to Fig. 25, a hydrogen peroxide injecting device 29 and a bromide ion concentration measuring device 41 are connected to an impure water supply line 1a connected to a water treating tank 1. The bromide ion concentration measuring device 41 is on the upper side of the hydrogen peroxide injecting device 29. The bromide ion concentration measuring device 41 measures the bromide ion concentration of impure water directly or indirectly. The bromide ion concentration measuring device 41 sends a signal representing a bromide ion concentration of the impure water to a hydrogen peroxide injecting rate calculating device 42 and a UV intensity calculating device 34. The hydrogen peroxide injecting rate calculating device 42 and the UV intensity calculating device 34 calculate power corrections for correcting values of power

supplied to a hydrogen peroxide feed pump 31 and a UV lamp regulating device 7 on the basis of the difference between a reference bromide ion concentration and a measured bromide ion concentration measured by the bromide ion concentration measuring device 41. Pump 31 feeds hydrogen peroxide from container 30. The values of power supplied to the hydrogen peroxide feed pump 31 and the UV lamp regulating device 7 are adjusted by using the corrections by a feed-forward operation.

Please amend the paragraph beginning at Page 39, line 31 as follows:

The risk of generation of bromic acid decreases with the decrease of the bromide ion concentration of the impure water. Then, the excessive injection of hydrogen peroxide into the impure water can be prevented. ~~by~~ The generation of bromic acid can be suppressed by an advanced-ozonation process principally using ozone and UV radiation. Consequently, improper use of hydrogen peroxide can be prevented, useless power consumption by the UV light sources 4 can be prevented, and safe, reliable water treatment can be achieved.